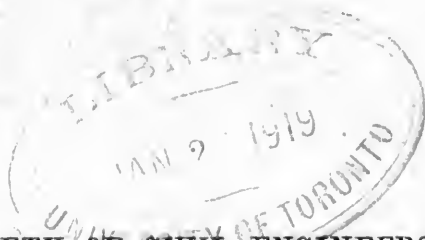


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AMERICAN SOCIETY OF CIVIL ENGINEERS.

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TRANSACTIONS.

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CCLXVII.

(Vol. XII.—November, 1883.)

THE SHUBENACADIE CANAL.

By E. H. KEATING, M. Am. Soc. C. E.

READ NOVEMBER 21ST, 1883.

This undertaking, although it has so far proved an utter failure in every respect, was at its inception deemed of the utmost importance to the trade and prosperity of the city of Halifax. Its promoters were among the leading men of the country; and it is stated that they were supported in their sanguine views by the most prominent English engineer of the past generation.

It is therefore thought that a brief account of this work may be of interest, and that it should be a valuable lesson to engineers to be extremely cautious as to how they endorse the opinions of other men before making the fullest inquiry into the correctness of the data upon which those opinions may have been founded.

The project was to open communication by water across the centre of the province of Nova Scotia, from Halifax harbor to the Basin of Mines, an arm of the Bay of Fundy.

The chief objects, as set forth by the company which undertook the construction of the canal, were :

1. To establish inland trade and develop the resources of the interior.
2. To enable Halifax more fully to participate in the trade of the ports and districts around the shores of the Bay of Fundy and its branches, by avoiding the long, and sometimes dangerous, sea voyage otherwise necessary.
3. To afford means for the expeditious transport of troops and materials of war from Halifax to New Brunswick and Canada. It was stated that this object would not be fully attained (at least as far as Canada was concerned) until the completion of the Bay Verte Canal, connecting the Bay of Fundy with Northumberland Strait, in the Gulf of St. Lawrence.
4. It was also thought that the canal would, in some mysterious way, give an important impetus to the West India trade.

The works were commenced by the Shubenacadie Canal Company in 1826 with a capital of *£60 000 (subject to be increased) and a donation from the local Legislature of £15 000. In 1829 the Government granted a further concession to the company in the shape of an annuity of £1 500 for ten years.

In a printed statement of the company, issued May 20th, 1829, the total estimated cost was placed at £66 750 6s. 0d, although it seems strange that in the same document appear the estimates of the engineer (Mr. Francis Hall) for the different sections, which, if added together, amount to £90 818 16s. 6d.

The design of the canal was as follows (see Plate):

Length of navigation from Halifax harbor to the mouth of the Shubenacadie River, in the Basin of Mines, 53 miles 1 024 yards.

Fifteen locks, each 87 feet by 22 feet 6 inches, capable of taking vessels drawing 8 feet of water.

The artificial works to occupy only 2 739 yards of the whole line ; the remainder to be formed by lakes and the Shubenacadie River.

The aggregate lockage from the tide-waters at Halifax harbor to medium high tides in the Basin of Mines,	}	Ascending, 95' 10"
		Descending, 95' 4"
		Total, 191' 2"

The navigation throughout was intended to accommodate vessels

* The £ referred to is the late Nova Scotia pound currency, equal to four-fifths of a pound sterling.

drawing 8 feet of water, and it was stated that the depth of water might be increased, at comparatively small outlay, so that vessels of 11 feet draught could pass through.

It may be of interest to know that the consideration of "this undertaking, with all its details," was submitted to Thomas Telford, the founder of the Institution of Engineers; and in the published statement previously alluded to, it is asserted that "his report, founded upon a minute investigation of the whole subject, pronounces his most favorable opinion of the proceedings and objects of the company." That Mr. Telford had confidence in the success of the scheme would appear from the fact that his name appears on the list of shareholders for £450. He did not, however, visit the country, and it must be presumed that he had no means of forming an opinion other than the representations of those deeply interested in the undertaking—his employers—whose calculations ultimately proved fallacious.

The probable annual revenue, "on the lowest estimate," which the company considered would be forthcoming shortly after opening the canal to traffic, was as follows :

"FOR DESCENDING FREIGHT.

"Timber and spars, plank, boards, &c., shingles, laths, staves, wharf logs, wood for fuel, tanner's bark, &c., of the value of £20 000, at 15 per cent.	£3 000
"Gypsum and freestone, building materials, lime and bricks, of the value of £12 500, at 10 per cent.	1 250
"Hay and straw, salted provisions, flour and meal, grain, fruit, roots, cattle, and other agricultural produce, of the value of £40 000, at 5 per cent.	2 000

"FOR ASCENDING FREIGHT.

"Pickled and salted fish, West India produce, British and East India merchandise, &c., of the value of £74 000, at 2½ per cent.	1 850
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"Amount of annual income..... £8 100

"It thus appears that, under a very low rate on the value of the above articles alone, a revenue equal to 10 per cent. on the capital of the company (£60 000) may be soon anticipated, after making a large allowance for repairs, additions, and the expense of management.

"Yet, in the above estimate, neither vessels or passengers, *coal*, nor a variety of other articles are included. *Slate* alone, it is believed, will, when the quarries are fully worked, be productive of tolls to the extent of between £2 000 and £3 000 per annum."

The above quotations from the company's statement will give some idea of the nature and extent of the anticipated traffic through the canal, which, however, was never realized in the smallest degree.

Up to the close of 1831, £72 000 had been expended upon the works. Some of the locks near Halifax had not then been commenced, and much expensive work remained to be done elsewhere on the line. All the available capital being exhausted, the works were abandoned for the time and rapidly fell into ruin. They never were completed on the original plans.

The canal was sold under a foreclosure of mortgage, in 1851, for a debt of £20 000—money advanced to the company by the British Government, under certain conditions, which were not fulfilled—and passed into the hands of the Provincial Government. After having kept the property idle upon their hands for three years, the Government sold it in June, 1854, to the "Inland Navigation Company." In 1856, this company employed an American engineer, Mr. W. H. Talcott, to report upon a scheme for completing the works on a very much smaller scale than was at first proposed. The project now entered upon was to make a canal for boats, 66 feet in length by 16½ feet in width, drawing 4 feet of water; to dispense with five continuous locks at Dartmouth, at the Halifax end, and to substitute an inclined plane with a lift of 55 feet, and a similar plane of 33 feet lift at Porto Bello, each to be worked by hydraulic machinery.

Mr. Talcott's estimate for completing the works on this plan was \$69 000. His report, strongly in favor of the scheme, was adopted, and the canal was opened for traffic on this basis in 1862. The cost, however, proved to be about \$200 000.

This company, known in 1863 and subsequently as "The Lake and River Navigation Company," undertook the operation of the traffic.

As a commercial enterprise, the diminished canal proved a dreadful failure. Things were no better under the administration of the new company than they had been with others. The canal was not of sufficient capacity to accommodate coasting vessels, or to draw that trade which it otherwise might have taken. The endeavor was made to keep it open

until the year 1870, when the whole of the works, lands and privileges were sold to a private individual for \$50 000. Since that date no trade of any kind has been carried on through the canal.

The greatest receipts in tolls for any one year never exceeded \$3 000, and in 1870 they had fallen off to \$900. The opening up of railways throughout the Province undoubtedly contributed to this result, and to the failure of the scheme.

This communication is accompanied with a lithographed plan and plate profile of the works (Plate XXIX).

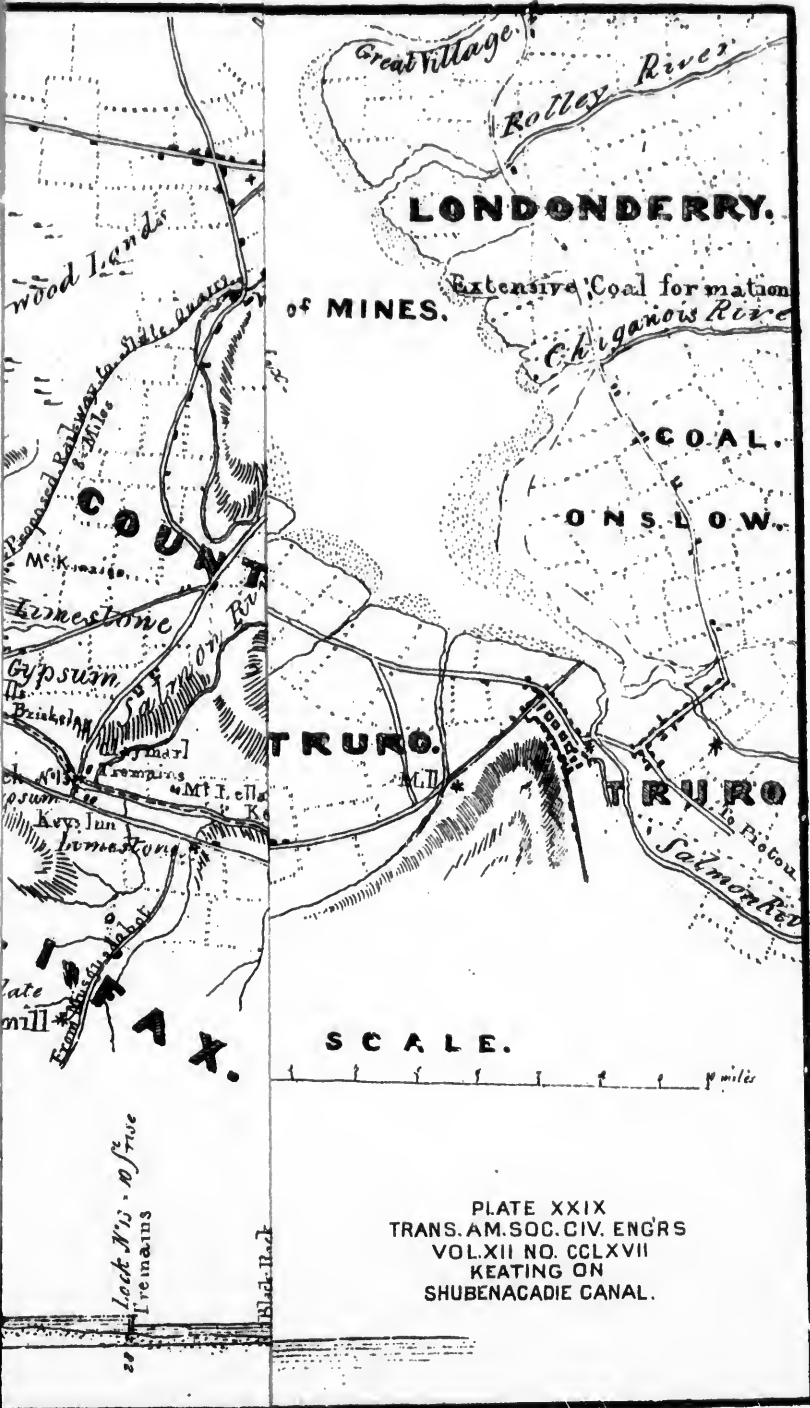
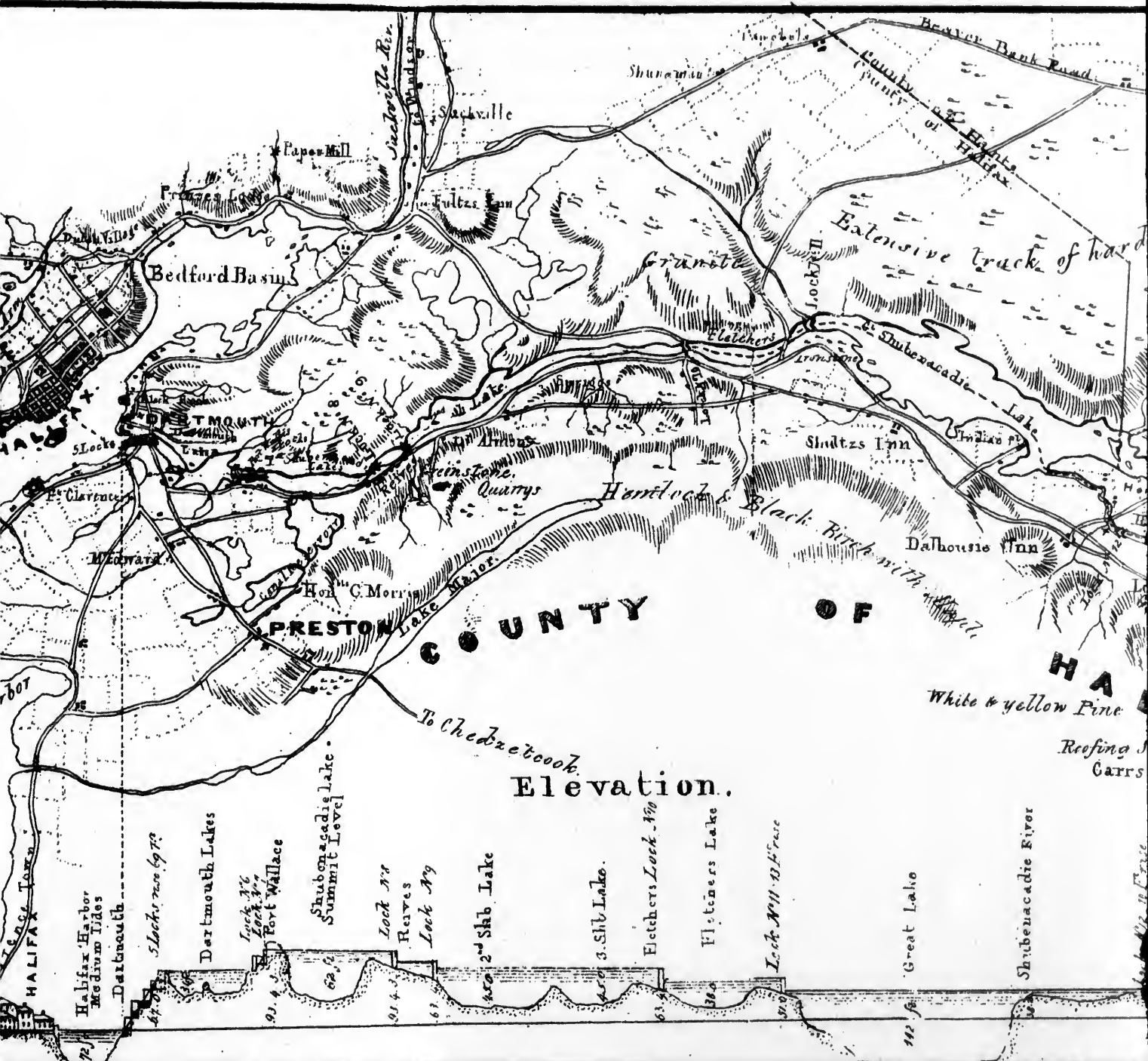


PLATE XXIX
TRANS. AM. SOC. CIV. ENGRS
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KEATING ON
SHUBENACADIE CANAL.

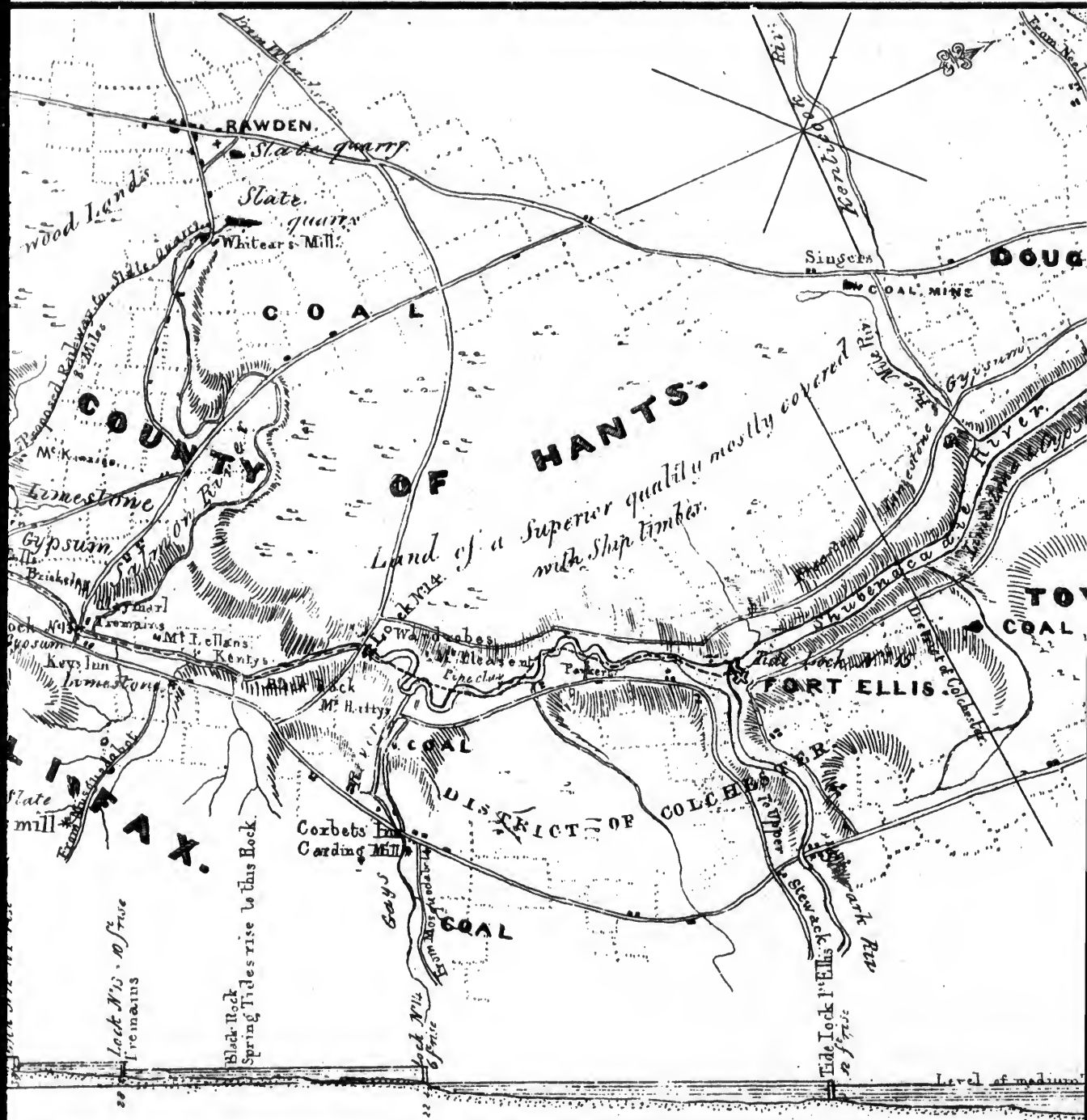


MAP and ELEVATION of the SHUBENACADIE N

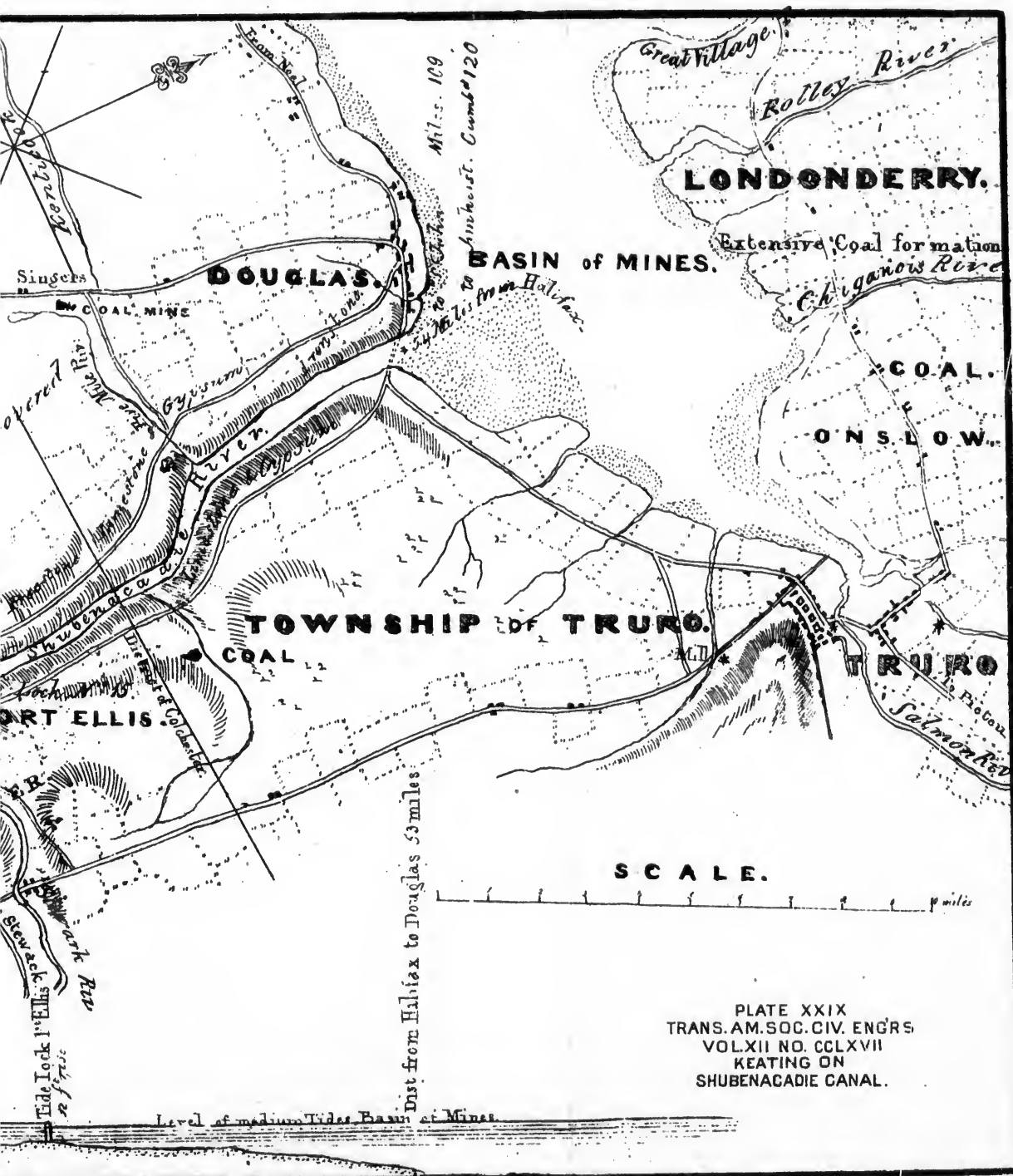
The map illustrates the Shubenacadie River system, including its major tributaries like the Sackville River and the Shubenacadie Lake. Key locations marked include Bedford Basin, Dartmouth, and Shubenacadie Lake. The map also shows the extensive track of hard granite and the Shubenacadie River. A section titled "Elevation." provides a profile of the river, showing elevations from 400 to 1000 feet. The map is titled "MAP and ELEVATION of the SHUBENACADIE N".



AVIGATION from HALIFAX HARBOUR to the BASIN of MINN



the **BASIN of MINES.**



DRAWN BY F. HALL, ENG^r